

Notice No.1

Rules and Regulations for the Classification of Naval Ships, January 2022

The status of this Rule set is amended as shown and is now to be read in conjunction with this and prior Notices. Any corrigenda included in the Notice are effective immediately.

Please note that corrigenda amends to paragraphs, Tables and Figures are not shown in their entirety.

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Amendments to	Effective date	IACS/IMO implementation (if applicable)
Volume 1, Part 1, Chapter 2, Sections 1 & 4	1 July 2022	N/A
Volume 1, Part 1, Chapter 3, Section 13	1 July 2022	N/A
Volume 1, Part 3, Chapter 1, Section 5	1 July 2022	N/A
Volume 1, Part 3, Chapter 2, Section 1	1 July 2022	N/A
Volume 1, Part 3, Chapter 3, Sections 2 & 3	1 July 2022	N/A
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Volume 1, Part 3, Chapter 5, Sections 2, 6, 7 & 8	1 July 2022	N/A
Volume 1, Part 4, Chapter 1, Section 8	1 July 2022	N/A
Volume 1, Part 4, Chapter 2, Section 10	1 July 2022	N/A
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Volume 1, Part 5, Chapter 4, Section 2	1 July 2022	N/A
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Volume 1, Part 6, Chapter 6, Section 6	1 July 2022	N/A
Volume 1, Part 7, Chapter 2, Sections 1 & 3	1 July 2022	N/A



Volume 1, Part 1, Chapter 2 Classification Regulations

■ Section 1 Conditions for Classification

1.1 Framework for Classification

1.1.9 It is a requirement of classification that stability and subdivision arrangements are to comply with and be maintained in compliance with a specified standard(s). The specified standard(s) and ongoing certification regime are to be notified to LR by the Naval Administration in writing. Where the Naval Administration, or its ~~recognised organisation~~ **Recognised Organisation**, approves the arrangements for compliance with the required stability and subdivision standards, a copy of the following documentation is to be submitted:

- approval documentation issued by the Naval Administration stating that arrangements have been examined against the required standard and are acceptable.
- ~~accepted arrangements of openings, closing appliances, vents, etc. such that the limits of the watertight integrity may be defined at the design draught. From these limits such that the pressure heads for watertight structure and watertight/weathertight closing requirements for openings, etc. can be identified.~~
- accepted arrangements of openings, closing appliances, vents, etc.

Alternatively, where requested, LR will approve the arrangements against the agreed standard(s).

■ Section 4 Surveys – General

4.9 Withdrawal/Suspension of Class

4.9.6 When any ship proceeds to sea with a ~~design~~ draught greater than that approved, the Class will be liable to be withdrawn or suspended for the voyage.

Volume 1, Part 1, Chapter 3 Periodical Survey Regulations

■ Section 13 Screwshafts, tube shafts and propellers

13.1 Definitions

13.1.2 **Fresh Water sample test.** At the Screwshaft Survey, a sample of the fresh water in a closed loop fresh water lubricated shaft is to be taken in the presence of a Surveyor. ~~The requirements for Fresh Water sample tests are given in the **ShipRight Procedure Machinery Planned Maintenance and Condition Monitoring**.~~ Fresh Water sample tests are to be carried out at regular intervals not exceeding six months. The samples are to be taken under service conditions and are to be representative of the water circulating within the sterntube. The Fresh Water sample test shall include measurement of chloride and sodium content, pH value and presence of particles from both metallic and synthetic materials. Analysis results are to be retained on board.

13.2 Closed systems – Oil lubricated shafts or closed loop system fresh water lubricated shafts: Frequency of surveys

13.2.5 ~~For~~ **Closed loop system fresh water lubricated shafts** may be surveyed in accordance with TS Method 2 or for **keyless shafts** TS Method 3, only if the descriptive note **ShipRightSCM** is assigned. Notwithstanding this, the maximum interval between two surveys carried out according to TS Method 1 shall not exceed 15 years, other than in the exceptional case when one extension for no more than three months is agreed.

13.2.8 When the class notation **ShipRightSCM** is assigned to a closed loop system fresh water lubricated shaft, whenever a survey is to be carried out in accordance with TS Method 1, as required by [Vol 1, Pt 1, Ch 3, 13.2 Closed systems – Oil lubricated shafts or closed loop system fresh water lubricated shafts: Frequency of surveys 13.2.5](#) above, it may be replaced by a survey in accordance with TS Method 2.

13.2.9 For oil lubricated arrangements, the descriptive note class notation **ShipRightSCM** is not a prerequisite in order to hold TS Method 2 and TS Method 3.

13.2.913.2.10 In order to assign and maintain the descriptive note **ShipRightSCM** class notation **ShipRightSCM**, the requirements of *Vol 2, Pt 3, Ch 2, 5 Control and monitoring* and *ShipRight Procedure Machinery Planned Maintenance and Condition Monitoring, Section 4*, are to be complied with, including the requirements therein for onboard maintenance of records and review of them by the attending Surveyor at Annual Survey.

Existing paragraphs 13.2.10 and 13.2.11 have been renumbered 13.2.11 to 13.2.12.

13.3 Open Systems – Water Lubricated Shafts: Frequency of surveys

13.3.5 For shafts with a keyless propeller connection or a flanged propeller connection (including controllable pitch propellers for main propulsion purposes), and when the class notation **ShipRightSCM** is assigned to an open loop water lubricated shaft, a TS Method 4 survey may be replaced by a TS Method 2 or TS Method 3 survey. Notwithstanding this, the maximum interval between two surveys carried out according to TS Method 2 or TS Method 4 shall not exceed 15 years, except in the case when one extension for no more than three months is agreed.

13.3.6 For shafts with a keyed propeller connection, and when the class notation **ShipRightSCM** is assigned to an open loop water lubricated shaft, a TS Method 4 survey may be replaced by a TS Method 2 survey.

Existing paragraphs 13.3.5 and 13.3.6 have been renumbered 13.3.7 and 13.3.8.

13.4 Survey extensions

(Part only shown)

Table 3.13.1 Summary of survey intervals and extensions – Closed systems

Closed Loop System Fresh Water Lubricated			
	Flanged Propeller Coupling	Keyless Propeller Coupling	Keyed Propeller Coupling (see Note 2)
Every 5 years (see Note a1)	TS Method 1 (see Note 7) or TS Method 2 (see Note 7) or TS Method 3	TS Method 1 (see Note 7) or TS Method 2 (see Note 7) or TS Method 3	TS Method 1 (see Note 7) or TS Method 2 (see Note 7)
Extension 2,5 years	Yes (see Note 4)	Yes (see Note 4)	Yes (see Note 4)
Extension 1 year	Yes (see Note 5)	Yes (see Note 5)	Yes (see Note 5)
Extension 3 months	Yes (see Note 6)	Yes (see Note 6)	Yes (see Note 6)

General notes:

Note 7. The maximum interval between two surveys carried out according to TS Method 1 (or TS Method 2 for arrangements where **ShipRightSCM** was assigned) shall not be more than 15 years, except in the case when one extension for no more than 3 months is agreed.

Table 3.13.2 Summary of survey intervals and extensions – Open systems

<ul style="list-style-type: none"> Single shaft operating exclusively in fresh water. Single shaft provided with adequate means of corrosion protection, single corrosion-resistant shaft. All kinds of Mmultiple shaft arrangements. 	Other shaft configurations.		
	All types of propeller coupling (see Note d4)		All types of propeller coupling (see Note 4)
Every 5 years (see Note 1)	TS Method 4 (see Note 5)	Every 3 years (see Note 1)	TS Method 4
Extension 1 year	Yes (see Note 2)	Extension 1 year	Yes (see Note 2)
Extension 3 months	Yes (see Note 3)	Extension 3 months	Yes (see Note 3)

General notes:

For surveys (TS Method 4) completed within 3 months before the shaft survey due date, the next period will start from the shaft survey due date.

If the extension survey is carried out within 1 month of the shaft survey due date then the extension will take effect from the shaft survey due date. If the extension survey is carried out more than 1 month prior to the shaft survey due date, then the period of extension counts from the date when the extension survey was completed.

Notes:

Note 1. Unless an ~~E~~xtension (Extension 1 year, Extension 3 months) is applied in between.

Note 2. No more than one extension can be considered. No further extension, of any other type, can be considered.

Note 3. One extension can be considered. In the event an additional extension is agreed the requirements of the 1 year extension are to be carried out and the shaft survey due date prior to the previous extension is extended for a maximum of 1 year.

Note 4. For keyless propeller connections the maximum interval between two consecutive dismantling and verifications of the shaft cone by means of non-destructive examination (NDE) shall not exceed 15 years.

Note 5. Unless class notation **ShipRightSCM** is assigned.

13.5 Shaft Survey Methods-survey methods

(Part only shown)

Table 3.13.3 Shaft survey methods

	TS METHOD 1	TS METHOD 2	TS METHOD 3	TS METHOD 4
PROPELLER				
Visual examination of the propeller. Examination of the edges and roots of the propeller's blades by an approved surface crack detection method, if deemed necessary by the Surveyor	X	X	X	X
Controllable pitch propellers, where fitted, are to be opened up and the working parts examined, together with the control gear. Propeller to be examined upon reassembly	X	X		X
Where a controllable pitch propeller is fitted, at least one of the blades is to be dismantled completely for examination of the working parts and the control gear. Propeller to be examined upon reassembly. Operational test of pitch functionality to its full range, including visual confirmation of no leakage in the CPP seals	X	X	X	X
Examination of the propeller following re-installation	X	X		X

Volume 1, Part 3, Chapter 1 General

■ Section 5 Definitions

5.2 Principal particulars

5.2.13 Design draught (scantling draught) ~~may be determined~~ is measured from the waterline when the vessel is in a deep draught condition plus any specified design, build or Owners margins, see [Vol 1, Pt 3, Ch 1, 5.3 Margins](#). Where specified, a higher waterline may be used for any temporary operational conditions exceeding the design draught, for example a docked down condition.

5.2.14 Deep draught is measured at a displacement such that the ship is in all respects complete, and is fully loaded with full complement, stores, fuel, water and payload plus any specified growth margin, see [Vol 1, Pt 3, Ch 1, 5.3 Margins](#). A deep operational draught may be defined for machinery trials and performance measurement where the deep draught is unachievable at the start of life. Where a vessel has an assigned load line, the deep draught is not to be less than the summer load line draught.

5.3 Margins

5.3.3 Owners ~~Admiralty board~~-margin is an allowance to cater for modifications made by the Owner to the vessel or equipment during the design and build stages.

5.3.4 Growth margin is an allowance for future controlled and uncontrolled weight growth ~~during~~ over the design life of the ship.

Volume 1, Part 3, Chapter 2 Ship Design

■ Section 1 General

1.3 Watertight and weathertight integrity

1.3.6 Damage stability

(Part only shown)

1.3.7 Typically there are two approaches to defining the limits of watertight and weathertight integrity:

(b) The other is based on watertight integrity up to a damaged stability ~~draft~~ draught and heel envelope, ~~the latter is~~ and more commonly used by ~~Navies~~ Navies.

(Part only shown)

1.3.9 [Figure 2.1.2](#) represents a standard based on the damaged stability ~~draft~~ draught and heel envelope approach commonly used by ~~Navies~~ Navies.

Volume 1, Part 3, Chapter 3 Ship Control Systems

■ Section 2 Rudders

2.11 Rudder blade

(Part only shown)

Table 3.2.6 Double plated rudder construction

Symbols

T = ~~design~~ draught, in m, as given in [Vol 1, Pt 3, Ch 1, 5.1 General](#);

...

■ Section 3 Stabiliser arrangements

3.9 Fin plating

(Part only shown)

3.9.1 The thickness of the fin side plating is not to be less than that determined from the following:

where

T = ~~maximum~~ ~~design~~ draught, in metres

**Volume 1, Part 3,
Chapter 4
Closing Arrangements and Outfit**

■ **Section 2
Hatches and miscellaneous openings on the weather deck**

2.2 Hatch coamings

2.2.1 The height of coamings above the upper surface of the weather deck, measured above sheathing if fitted, is to be not less than 300 mm. For exposed decks immediately above the design ~~draft~~ ~~draught~~, e.g. quarter decks and well decks, coaming heights are to be no less than 600 mm. Coaming of a height no less than 450 mm may be provided if the hatch cover is kept closed and a small access hatch is provided in the hatch cover.

■ **Section 8
Scuppers and sanitary discharges**

8.2 Closing appliances

(Part only shown)

8.2.6 Scuppers and discharge pipes originating at any level which penetrate the shell either more than 450 mm below the deck forming the vertical limit of watertight integrity or less than 600 mm above the ~~deep~~ ~~design~~ draught waterline, are to be fitted with an automatic non-return valve at the shell. This valve, unless required by [Vol 1, Pt 3, Ch 4, 8.1 General 8.1.3](#), may be omitted provided the piping has a minimum wall thickness of:

**Volume 1, Part 3,
Chapter 5
Anchoring, Mooring, Towing, Berthing, Launching, Recovery and Docking**

■ **Section 2
Equipment Number**

2.1 Equipment Number calculation

(Part only shown)

2.1.1 The anchoring and mooring equipment specified in this Section is based on an 'Equipment Number' which is to be calculated as follows:

Δ = displacement, in tonnes, of the ship at its ~~deep~~ ~~draft~~ ~~design~~ draught waterline.

■ **Section 6
Mooring arrangements**

6.3 Mooring lines (Equipment Number > 2000)

(Part only shown)

6.3.2 The strength of mooring lines and the number of head, stern, and breast lines for ships with an Equipment Number > 2000 is based on the side-projected area A_1 . Side-projected area A_1 is to be calculated similar to the side-projected area A , according to [Vol 1, Pt 3, Ch 5, 2.1 Equipment Number calculation](#) but considering the following conditions:

(a) For ships with substantial variation in draught such as fleet tankers, the ballast draught is to be considered for the calculation of the side-projected area A_1 . For ship types having small variation in the draught, the side projected area A_1 may be calculated using the ~~design~~ draught ~~summer~~ ~~load~~ waterline.

■ **Section 7** **Towing arrangements**

7.6 Strength requirements for towing arrangements

(Part only shown)

7.6.1 The minimum Breaking Load (hereinafter referred to as *BL*), of the towing hawser carried on board the ship is assessed, in tonnes, and is not to be less than that calculated below:

Δ = displacement, in tonnes, of the ship at its ~~to the deep~~ **design draught** waterline.

■ **Section 8** **Anchor windlass design and testing**

8.14 Structural requirements for windlasses on exposed fore decks

8.14.1 Windlasses located on the exposed deck over the forward $0,25L_R$ of the Rule length, of naval ships of sea-going service of length 80 m or more, where the height of the exposed deck in way of the item is less than $0,1L_R$ or 22 m above the ~~summer-lead waterline~~ **design draught**, whichever is the lesser, are to comply with the following requirements. Where mooring winches are integral with the anchor windlass, they are to be considered as part of the windlass.

Volume 1, Part 4, Chapter 1 Military Design

■ **Section 8** **Design guidance for the reduction of radiated noise underwater due to sea-inlets sea inlets or other openings**

8.1 General

8.1.6 No underwater opening, at a level lower than the **deep** design draught, is to be fitted within 6 m of the aftermost part of the aft sonar dome.

Volume 1, Part 4, Chapter 2 Military Load Specification

■ **Section 10** **Aircraft operations**

10.9 Deck stiffening design

10.9.4 Where continuous secondary stiffeners pass through the webs of primary members, they are to be fully collared or lugged in way. The shear stresses at the connections are to be in compliance with [Vol 1, Pt 6, Ch 5 Structural Design Factors - Vol 1, Pt 6, Ch 6, 6.5 Arrangement at intersection of continuous secondary and primary members 6.5.12](#).

Volume 1, Part 4, Chapter 3 Special Features

■ Section 4 Side, stern doors and other shell openings

4.9 Design loads

(Part only shown)

4.9.1 The design force considered for the scantlings of primary members, securing and supporting devices of side shell doors and stern doors are to be taken not less than:

The symbols used are defined as follows:

T = summer design draught, in metres

Volume 1, Part 6, Chapter 6 Material and Welding Requirements

■ Section 6 Construction details

6.5 Arrangement at intersection of continuous secondary and primary members

6.5.12 The cross-sectional areas of the connections are to be determined from the proportion of load transmitted through each component in association with the appropriate permissible stress allowable stress coefficient given in [Table 6.6.2 Thickness of end brackets](#) [Table 6.6.3 Allowable stress coefficients](#).

Table 6.6.3 Permissible stresses Allowable stress coefficients

Item	Allowable direct stress coefficient, f_d N/mm (see Note 1)	Allowable shear stress coefficient, f_t N/mm (see Note 1)
Primary web plate stiffener adjacent to connection with secondary member	1570,67	—
Welded connection of primary member web plate stiffener to secondary member:		
Double continuous fillet	417,70,50	—
Automatic deep penetration	1570,67	—
Lug or collar plate and weld connection	—	98,10,72 (see Note 2)

Note 1. Where there is no cyclic loading, the high tensile steel stress correction factor f_{hts} is to be taken as 1,0, see also [Vol 1, Pt 6, Ch 5, 1.3 Higher tensile steel](#).

Note 2. For emergency landing areas, the allowable shear stress coefficient f_t is to be taken as 0,90.

Volume 1, Part 5, Chapter 3 Local Design Loads

■ Section 1 Introduction

1.3 Symbols and definitions

(Part only shown)

1.3.1 The symbols and definitions applicable to this Chapter are defined below or in the appropriate sub-Section. L_{WL} , B , B_{WL} , D , T and C_b are defined in [Vol 1, Pt 3, Ch 1, 5.2 Principal particulars](#).

T = mean draught at midships, in metres, to the design draught waterline, based on L_{WL} , measured from the moulded baseline

T_x = local draught, in metres, measured from the underside of the keel to the design draught waterline at the longitudinal position under consideration, see [Figure 3.1.2 Definition of symbols](#). For the calculation of bottom impact pressures, T_x (T_{FB}) is to be taken as the minimal draught for all operational loading conditions measured from the underside of the keel to the operational waterline at the longitudinal position under consideration, see [Vol 1, Pt 5, Ch 3, 4.2 Bottom impact pressure, IP_{bi} 4.2.1](#).

...

(Part only shown)

1.3.3 **Design loading condition.** The design loading condition is to be taken as the ~~normal operating deep draft design draught condition with tanks and consumables, etc.~~ in the departure state, see also [Vol 1, Pt 5, Ch 4, 2.1 General 2.1.3](#). Where there is a significant variation in loading conditions or operating modes, then it may be necessary to consider additional loading conditions which represent the extremes of service requirements. For example:

- a ship which is required to operate at a ~~much temporary draught deeper draft~~ than the ~~normal sea-going design draft draught~~ for off-loading payload.

■ Section 3 Loads on shell envelope

3.4 Hydrodynamic wave pressure, P_w

(Part only shown)

3.4.4 The nominal wave limit height, H_w , above the design ~~draft~~ draught, T_x , is to be taken as:

■ Section 5 Local design loads for decks and bulkheads

5.7 Pressure height for watertight bulkheads and boundaries, H_{da}

(Part only shown)

5.7.1 The design lateral pressure height for watertight bulkheads and boundaries, H_{da} , is to be taken as

(b) for a watertight bulkhead design philosophy based on a standard which requires a damaged stability ~~draft~~ draught and heel envelope approach, e.g. the red risk line approach, see [Vol 1, Pt 3, Ch 2, 1.3 Watertight and weathertight integrity 1.3.9](#) and illustrated in [Figure 2.1.2](#).

H_{da} = the distance, in m, from baseline to the damaged stability ~~draft~~ draught envelope at the centreline, see [Figure 3.5.3 Pressure height for watertight bulkheads](#).

5.10 Design loads for RSA notation assessment

(Part only shown)

5.10.4 Where local strength issues need to be considered, the following local loads are to be applied in the evaluation contained in [Vol 1, Pt 6, Ch 4, 4.1 Application](#):

- Hydrostatic load due to flooding, taking account of the increase in local ~~draft~~ draught.

Volume 1, Part 5, Chapter 4 Global Design Loads

■ Section 2 Still water global loads

2.1 General

2.1.3 As a minimum the following conditions are to be considered in deriving the maximum hogging and sagging still water bending moment and shear force envelopes:

- Deep draught (departure) condition with no growth margin.
- Light draught (arrival) condition with no growth margin.
- Deep draught condition with full growth margin.
- Light draught condition with full growth margin.
- Maximum and minimum operating draught conditions, if different to the above.
- Design draught condition.
- Ballast conditions, where appropriate.
- Any special mid-voyage conditions caused by changes in payload or ballast distribution.
- Other special loading conditions, e.g. Emergency evacuation or similar emergency scenario conditions, heavy payloads or cargo, deck cargo conditions, etc. where applicable.

Volume 1, Part 6, Chapter 3 Scantling Determination

■ Section 4 NS2 and NS3 scantling determination

4.5 Inner bottom structures

(Part only shown)

Table 3.4.3 Inner bottom structures

P_{hd} = is the P_h value for the local damaged ~~draft~~ stability draught envelope, where P_h is the hydrostatic pressure on the shell envelope, as defined in [Vol 1, Pt 5, Ch 3, 3.3 Hydrostatic pressure on the shell plating, \$P_h\$](#)

■ Section 14 Strengthening for bottom slamming

14.2 Strengthening of bottom forward

14.2.1 The bottom forward is to be additionally strengthened where the ship has a draught forward of less than $0,045L_R$ in any operational loading condition. This ~~the~~ minimum draught, T_{FB} , see [Vol 1, Pt 6, Ch 3, 14.2 Strengthening of bottom forward](#) [14.2.7](#) (NS1) or [Vol 1, Pt 5, Ch 3, 1.3 Symbols and definitions 1.3.1](#) (NS2 or NS3), is to be indicated on the shell expansion plan, the plan showing the internal strengthening, the Loading Manual and loading instrument, where fitted.

(Part only shown)

14.2.7 For NS1 ships with a block coefficient, C_b , greater than 0,6, the equivalent slamming pressure expressed as a head of water, h_s , is to be obtained from [Figure 3.14.1 Pressure heads](#) where, h_{max} is calculated from the following expressions:

T_{FB} is the minimum ~~draft~~ draught, in metres, at the location under consideration for all operational loading conditions, and is to be measured from the underside of the keel to the operational waterline

Volume 1, Part 7, Chapter 2 Total Design Loads

■ Section 1 General

1.3 Environmental conditions

1.3.2 The standard values of wave height factor, f_{Hs} , and service area factor, f_s , given in [Vol 1, Pt 5, Ch 3, 1.2 Environmental conditions 1.2.2](#) and [Vol 1, Pt 5, Ch 2, 2.4 Service area factors](#), respectively, are to be used for the total design loads unless otherwise stated. These factors may be adjusted for damaged loading conditions, residual strength analysis, **RSA**, or for special operating conditions, e.g. a temporary ~~deep draft~~ draught condition for the recovery of amphibious vehicles in sheltered waters.

■ Section 3 Design load combinations

3.2 Design cases for load combinations

(Part only shown)

3.2.2 Each set of load combinations may need to be considered for individual loading conditions to account for differences in local loadings, e.g. different tank fillings, payload or other loadings. This may be performed using either:

- (b) as individual load combination sets, in which case the actual still water bending moment and shear force distributions may be used together with the actual ~~draft~~ draught, trim and deadweight distribution.

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